

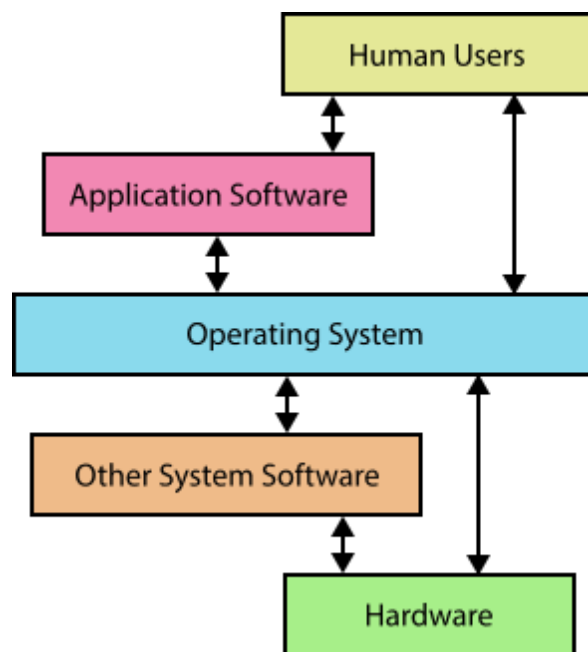
## Critical understanding of ICT

An operating system (OS) is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is a vital component of the system software in a computer system. This tutorial will take you through step by step approach while learning Operating System concepts.

## Why to Learn Operating System?

An Operating System (OS) is an interface between a computer user and computer hardware. An operating system is a software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.

Some popular Operating Systems include Linux Operating System, Windows Operating System, VMS, OS/400, AIX, z/OS, etc.



1.Process Management: – Process Management support operating system to create and delete processes. Process management also offers a mechanism for synchronization and communication among processes.

An operating system performs the following activities for process management:

The operating system maintains the track of the processor and the status of a process. The software which performs this task is referred to as a traffic controller.

It assigns the processor to the process.

It also performs the task of the de-allocated processor, if a process is no longer needed for the processor.

2. Memory Management: – Memory Management is used to manage Primary memory as well as secondary memory. The memory management module performs the allocation job and de-allocation of memory to the program.

The operating system performs various activities for memory management are:

It keeps track of memory means which part of the memory is in use, and what part of the memory is not in use.

Operating system helps to allocate the memory at the time when the process request for memory.

If process no longer needs memory, then de-allocates the memory.

In multiprogramming, the task of memory allocation to the processes is done with the help of Operating System.

3. File Management: – For fast or simple navigation and easy usage file system is organized into directories. These directories consist of directories and other files. It helps to handle all the file-related tasks like organization storage, retrieval, sharing, naming and files protection. It preserves track of information, location, status, user, etc.

4. Device Management: – Operating System performs the task of allocations and de-allocations of the devices. It helps to keeps the track of all the devices. With the help of Operating system, device communication via their respective drivers is performed. It manages the device in an effective manner.

5. Secondary Storage Management: – Operating System is responsible for secondary storage

management. The System has various levels of storage that consist of primary storage, secondary storage, and cache storage. The set of instruction and data are stored in primary memory or cache memory so that the program which is running can reference it.

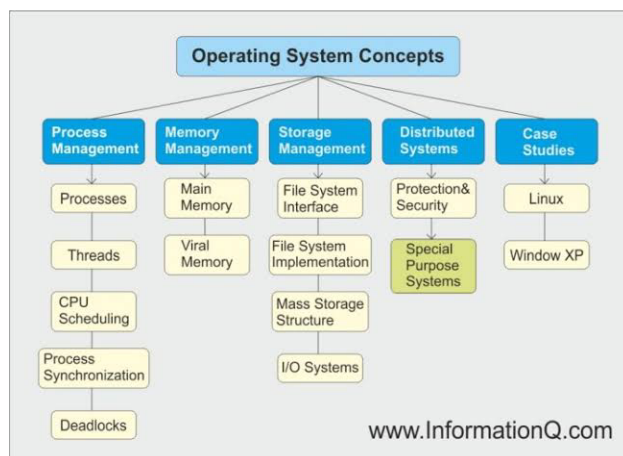
6. Security: – The Operating system is responsible for security means the operating system prevents the data and information from unauthorized access and threats.

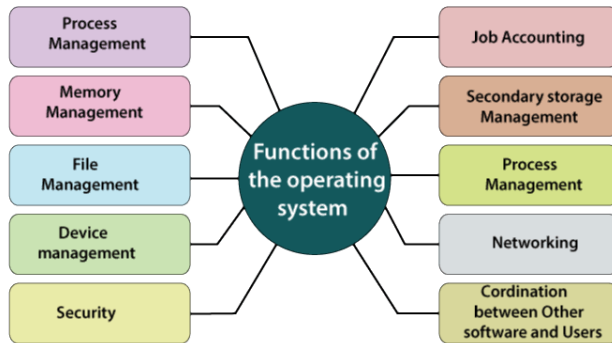
7. Coordination between other software and user: – The operating system also performs the task of coordination between other software and users. OS directs as well as allocates assemblers, interpreters, compilers, and other software to different computer system users.

8. Networking: – A distributed system means a bunch of processors which do not share memory hardware devices and clock. With the help of the network, the processor communicates with each other.

9. Job accounting: – Operating system performs the function of job accounting by keeping the track of time and resource used by several jobs and users.

10. Error detecting aids: – The operating system also performs the task of error detection. It continuously monitors the system to find or detect errors and prevents the system from the error.





## Introduction to Windows Operating System

Every computer needs an Operating System to function. Microsoft Windows is one of the most popular Graphical User Interface (GUI). Multiple applications can execute simultaneously in Windows, and this is known as “Multitasking”.

Windows Operating System uses both Keyboard and mouse as input devices. Mouse is used to interact with Windows by clicking its icons. Keyboard is used to enter alphabets, numerals and special characters.












Some of the functions of Windows Operating System are:

- Access applications (programs) on the computer (word processing, games, spread sheets, calculators and so on).
- Load any new program on the computer .
- Manage hardware such as printers, scanners, mouse, digital cameras etc.,
- File management activities (For example creating, modifying, saving, deleting files and folders).
- Change computer settings such as colour scheme, screen savers of your monitor, etc.

With reference to the Table 5.1, let us see the versions of Windows Operating System.

Windows 95		1995	<ul style="list-style-type: none"> <li>Introduced Start button, the taskbar, Windows Explorer and Start menu.</li> <li>Introduced 32 - bit processor and focused more on multitasking.</li> </ul>
Windows 98		1998	<ul style="list-style-type: none"> <li>Integration of the Web browser (Internet Explorer) with the Operating System.</li> <li>DOS gaming began to disappear as Windows based games improved.</li> <li>Plug and play feature was introduced.</li> </ul>
Windows NT			<ul style="list-style-type: none"> <li>Designed to act as servers in network.</li> </ul>
Windows Me		2000	<ul style="list-style-type: none"> <li>It introduced automated system diagnostics and recovery tools.</li> </ul>
Windows 2000		2000	<ul style="list-style-type: none"> <li>Served as an Operating System for business desktop and laptop systems.</li> <li>Four versions of Windows 2000 were released: Professional (for business desktop and laptop systems), Server (both a Web server and an office server), Advanced Server (for line-of-business applications) and Data Centre Server (for high-traffic computer networks).</li> </ul>
Windows XP		2001	<ul style="list-style-type: none"> <li>Introduced 64-bit Processor.</li> <li>Improved Windows appearance with themes and offered a stable version.</li> </ul>
Windows Vista		2006	<ul style="list-style-type: none"> <li>Updated the look and feel of Windows.</li> </ul>




Windows 7		2009	<ul style="list-style-type: none"> <li>Booting time was improved, introduced new user interfaces like Aero Peek, pinning programs to taskbar, handwriting recognition etc. and Internet Explorer 8.</li> </ul>
Windows 8		2012	<ul style="list-style-type: none"> <li>Windows 8 was faster than previous versions of Windows.</li> <li>Start button was removed.</li> <li>Windows 8 takes better advantage of multi-core processing, solid state drives (SSD), touch screens and other alternate input methods.</li> <li>Served as common platform for mobile and computer.</li> </ul>
Windows 10		2015	<ul style="list-style-type: none"> <li>Start Button was added again.</li> <li>Multiple desktop.</li> <li>Central Notification Center for App notification and quick actions.</li> <li>Cortana voice activated personal assistant.</li> </ul>

Table 5.1 Versions of Windows Operating System.

What are the Basic Elements of a Windows Operating System (GUI Interface)?

The current MAC and MS operating systems make use of what is called GUI (graphical user interface).

GUI operating systems have the following basic components:

**Pointer** - In Windows XP it is an arrow. When you move your pointer over a text area, it will change to an insertion point (like the uppercase letter I) so that you can begin typing or selecting text. (Sometimes it requires you to click your pointing device in the text area to change it to an insertion point.)

**Pointing Device** - In order to move your pointer, you must have a device connected to your computer such as a mouse or trackball. The mouse will enable you to make selections on the desktop or another display window by moving the pointer.

**Desktop** - The display area from which you begin working.

**Icons** - Small pictures that represent commands, files, or folders. When you use Windows, you execute commands by using the pointing device to move your pointer to an icon. When you double-click the icon, the command is executed or the folder is opened. You can also move icons on your computer desktop by "clicking and dragging."

**Windows** - The individual screens that enable you to work in different applications and view the contents of folders and drives. You can have a number of Windows opened simultaneously.

**Menus** - A list of commands that are available. In Windows XP, the most commonly used menu is the Start menu.

The Desktop is the Windows GUI interface with the computer and contains many components including:

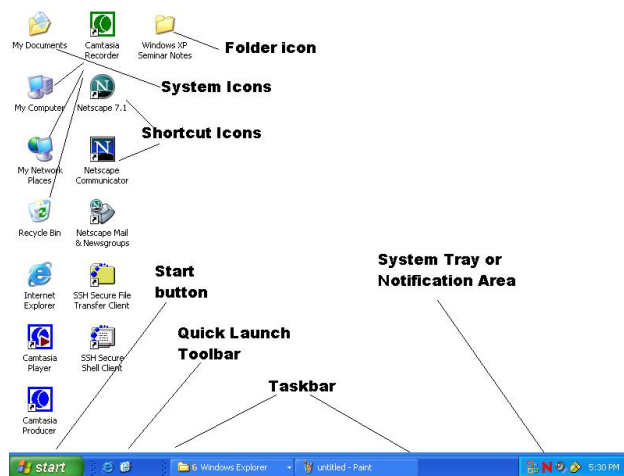
**Taskbar**: Usually located at the bottom of the screen, the Taskbar contains the Start button on the left and the System Tray or Notification Area on the right. When you open another Window or application, a button will appear on the Taskbar. You can use this button to quickly switch between the Windows you have open.

**Start button** - Provides quick access to your Start menu with all of your applications. We will examine the Start menu in Windows XP in more detail in the next section.

The System Tray (or Notification Area) displays the time as well as icons that represent programs that are loaded into memory. It is also called the Notification Area because this is the location used by Windows to notify you that something requires your attention, such as a problem with printing, new hardware detected, or critical updates ready to be installed.

You can also customize your Taskbar by adding other Toolbars such as Quick Launch.

You can change the characteristics of the Taskbar by right clicking on the unoccupied portion of the Taskbar and selecting Properties. We will look at some of the settings when we discuss the new Taskbar features in Windows XP in the next section.



A word processing program is a software program that includes tools for entering, editing, and formatting text and graphics. The electronic files you create using Word are called documents. One of the benefits of using Word is that document files can be stored in a variety of places on your computer, or in the cloud using one drive, and easily shared with others via disks, emails, or online file storage.

Type and edit text.

Copy and move text from one location to another in the document, or to other documents.

Format text and paragraphs with fonts, colors, pictures, tables, and many other tools.

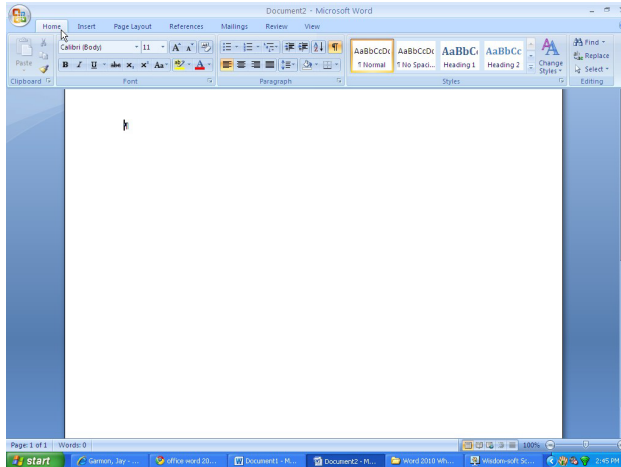
Design pages for specific purposes- from personal letters to sophisticated memos and reports.

Enhance documents for readability with pictures, charts, graphics, etc.

Use mail merge features to quickly and easily send customized communications to customers.

Share documents securely to others.

Communicate clearly and professionally with others by using the built-in tools of Word.



GCFGGlobal LogosearchmenuGoodwill Logo

## Word XP: Identifying Parts of the Word Window

### Introduction

Microsoft Word XP is the word processing application in the Microsoft Office suite. Create professional-looking, formatted text documents with this powerful word processing software.

By the end of this lesson, you should be able to:

Identify the parts of the Word XP window

Change the document view

Operate the drop-down menus

Identify the task pane

The basics of the Word window

Let's briefly review the basic parts of the Word XP window before we move onto word processing.

Shown below is the Microsoft Word default window. When Word is launched, a new blank document—or default window—opens in Print Layout view. Although window elements are fully explained in our Windows course, here is a brief explanation of the Word window.

## Word XP Window

### Components of Ms word

#### Title bar

This displays the document name followed by a program name.

#### Menu bar

This contains a list of options to manage and customize documents.

#### Standard toolbar

This contains shortcut buttons for the most popular commands.

#### Formatting toolbar

This contains buttons used for formatting.

#### Ruler

This is used to set margins, indents, and tabs.

#### Insertion point

This is the location where the next character appears.

#### End-of-document marker

This indicates the end of the document.

#### Help

This provides quick access to Help topics.

#### Scroll bars

These are used to view parts of the document.

#### Status bar

This displays the position of the insertion point and working mode buttons.

#### Task pane



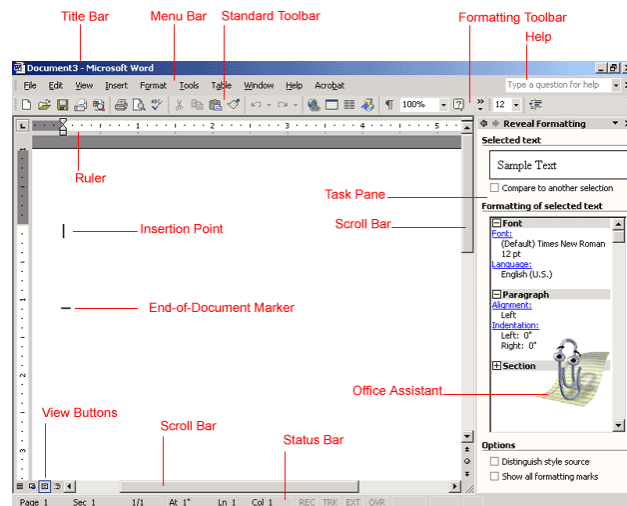
This provides easy access to commonly used menus, buttons, and tools.

## View buttons

These change the layout view of the document to normal, web layout, print layout, and outline view.

## Office Assistant

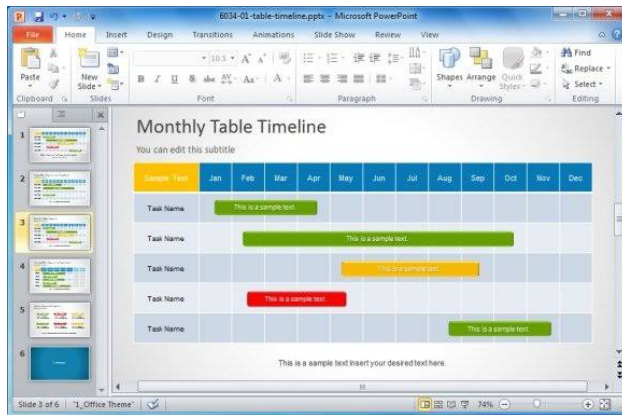
This links to the Microsoft Office Help feature.



## Introduction - What is Presentation Graphics?

Presentation Graphics (also called: Presentation Management) programs are used to create and edit "slides." These slides may be displayed under the control of the computer (using a variety of hardware and display device configurations available), printed as handouts or overhead transparencies, or processed into 35mm slides. Most often, these electronic slides are used as a visual aid for some type of presentation to an audience.

Slides in a presentation (aka: slide show) may contain text, graphics, sound clips, video clips, and special effects. When a slide show is displayed under control of the computer, the presenter can determine when each slide is displayed. Timings may be applied to slides (all of them or just some of them) resulting in a self-running presentation.



ments include the Office button, Quick Access toolbar, Title bar, Tabs, scroll bars and a Status bar.

power point window

Quick access toolbar contains buttons for commonly-used commands.

Title bar indicates the software, the name of the presentation that is open, minimize, maximize, and close buttons.

Tabs contain commands that are pided into related tasks called groups.

Ribbon is the area containing the tabs.

Outline/Slides tab displays the presentation text in the form of an outline. Outline tab is used to organize and develop the content of your presentation. This tab enables you to move slides and text by dragging selected material. Slide tab displays the slides of your presentation as small images. This view allows easy navigation through slides.

Slide pane contains the current slide in your presentation. You can use the vertical scroll bar to view other slides in the presentation.



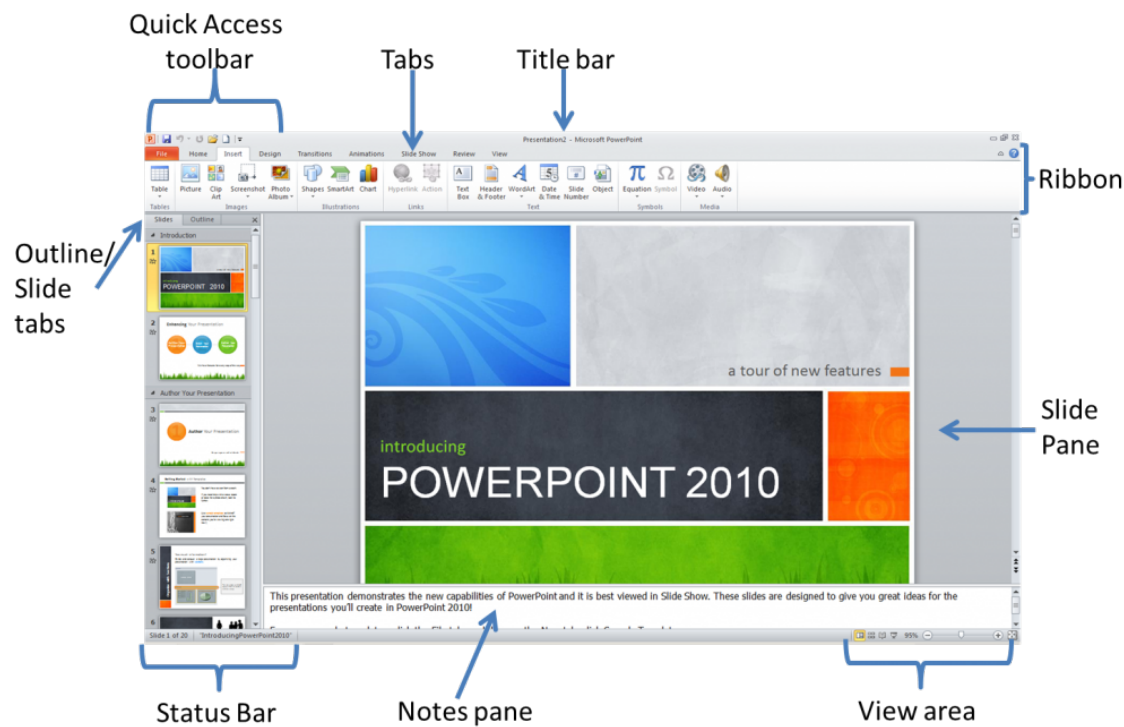
Notes pane is located below the slide pane and is used to type reference notes. The notes can be printed, then referenced when making the presentation.

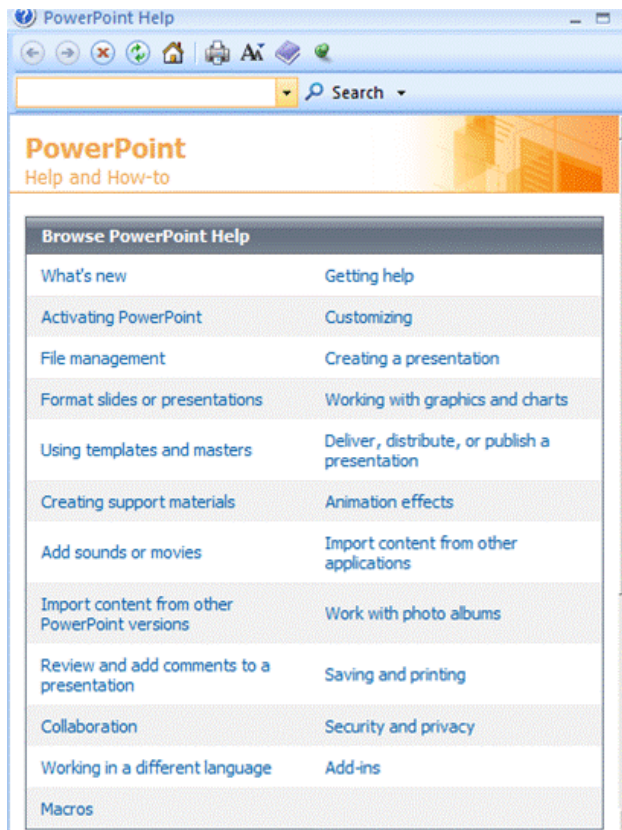
View area is located at the right hand bottom of the screen. It contains buttons that allow the ability to switch between PowerPoint views. The first view button allows you to view slides in normal view, the second is called the slide sorter view, the third is called the reader view and the fourth is called the slide show view. This area also contains the zoom feature.

Status bar is located at the bottom of the PowerPoint window, it shows messages and information about the view, such as the slide number and the current theme template used.

### PowerPoint Help System

The Help feature displays information on PowerPoint commands and features. You can activate the help menu by clicking the Help help button or by pressing F1 on the keyboard.





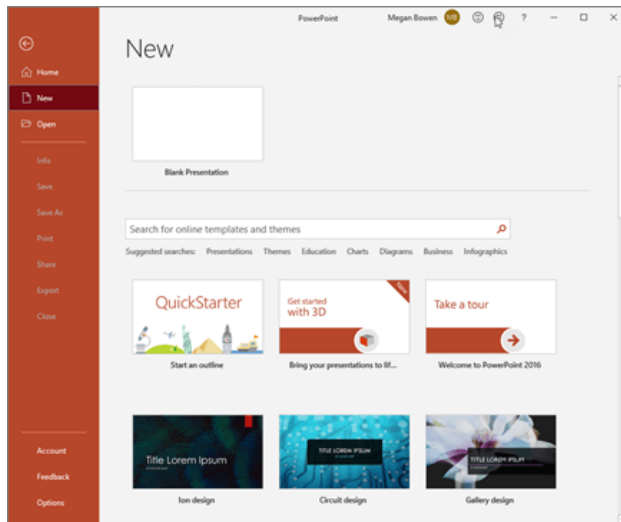
## Create a presentation

- ★ Open PowerPoint.
- ★ In the left pane, select New.
- ★ Select an option:

To create a presentation from scratch, select Blank Presentation.

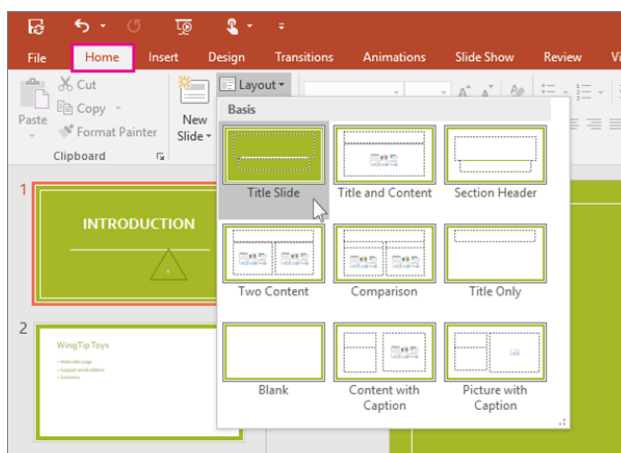
To use a prepared design, select one of the templates.

To see tips for using PowerPoint, select Take a Tour, and then select Create, .



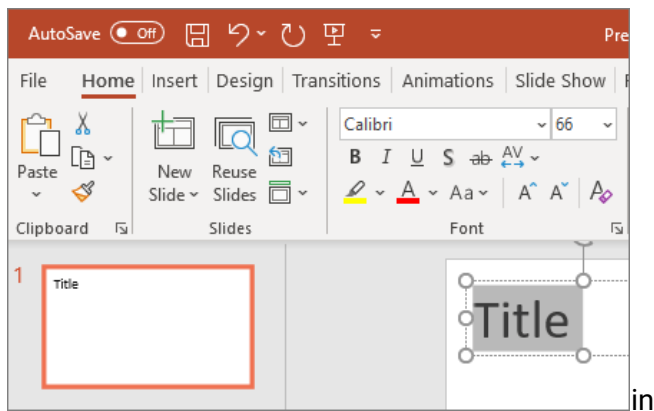
Add a slide

1. In the thumbnails on the left pane, select the slide you want your new slide to follow.
2. In the Home tab, in the Slides section, select New Slide.
3. In the Slides section, select Layout, and then select the layout you want from the menu.



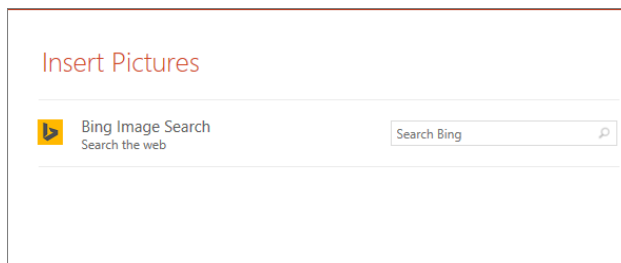
## Add and format text

1. Place the cursor inside a text box, and then type something.
2. Select the text, and then select one or more options from the Font section of the Home tab, such as Font, Increase Font Size, Decrease Font Size, Bold, Italic, Underline, etc.
3. To create bulleted or numbered lists, select the text, and then select Bullets or Numbering.



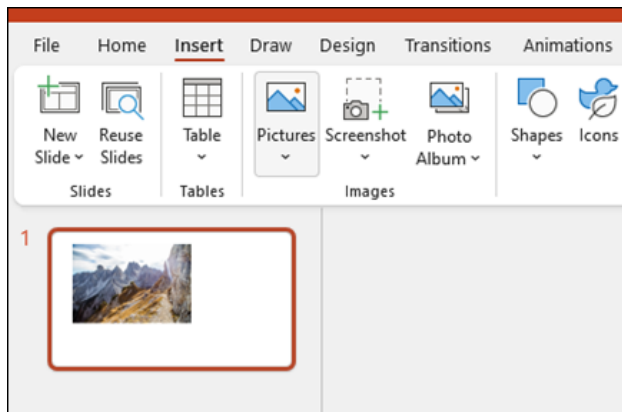
## Add a picture, shape, and more

1. Go to the Insert tab.
2. To add a picture:
  - ★ In the Images section, select Pictures.
  - ★ In the Insert Picture From menu, select the source you want.
  - ★ Browse for the picture you want, select it, and then select Insert.



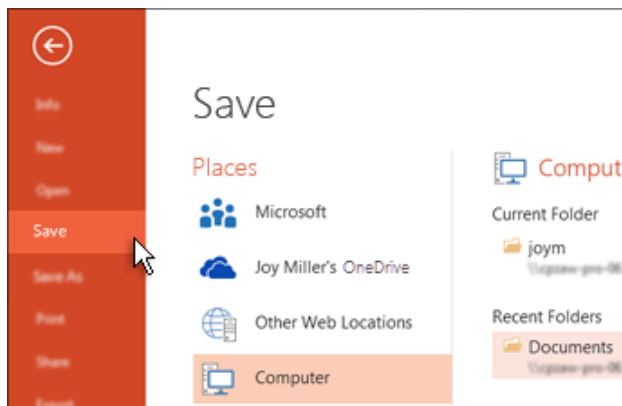
3. To add illustrations:

- In the Illustrations section, select Shapes, Icons, 3D Models, SmartArt, or Chart.
- In the dialog box that opens when you click one of the illustration types, select the item you want and follow the prompts to insert it.



### Save your presentation

1. On the File tab, choose Save.
2. Pick or browse to a folder.
3. In the File name box, type a name for your presentation, and then choose Save.



## Computer Concepts - Providing Aesthetics

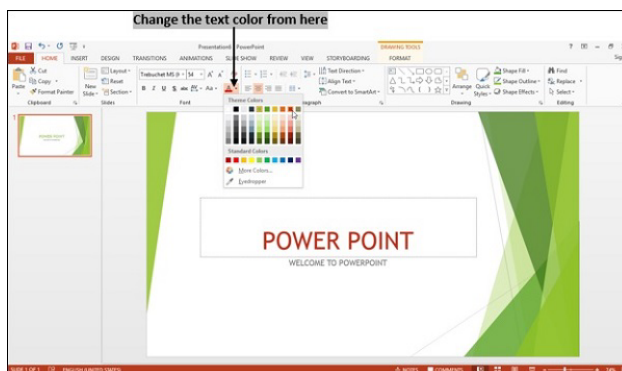
### Enhancing text presentation

Enhancing text can be done by altering font style, font color, font size, and using font case options.

#### Font Color

Enhancing text can be done using "font color" from "Home" menu.

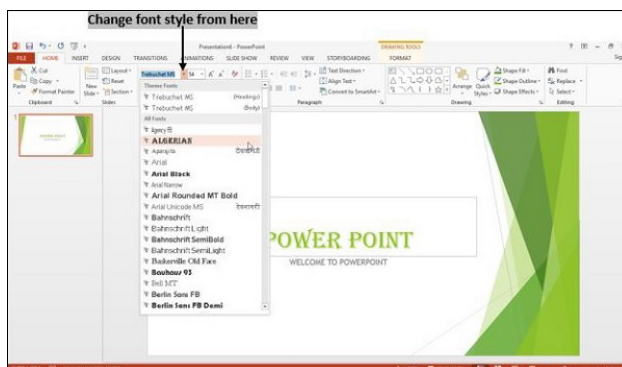
The text will be displayed in the color you have selected.



#### Font Style

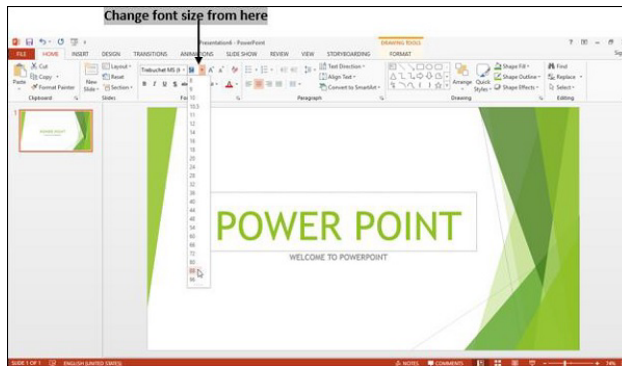
Enhancing text can be done using "Font Style" from "Home" menu.

You can change font styles of the text by selecting from the list of options in the drop down menu.



#### Font Size

To increase or decrease the font size, use "font size" option from "Home" menu.



## Highlight Text

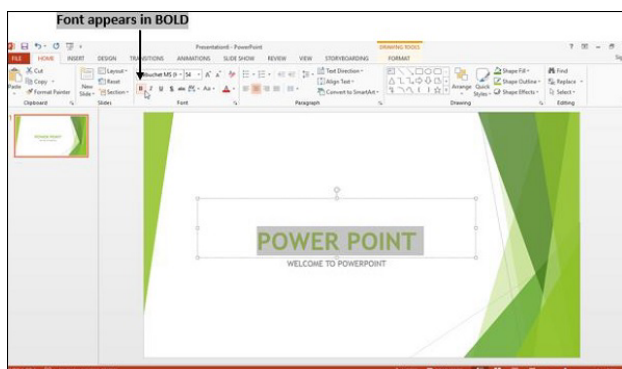
To enhance the text style, you may select either bold or italic.

You can also highlight your text using the underline option or text shadow.

Shortcut key for underline is "Ctrl + U".

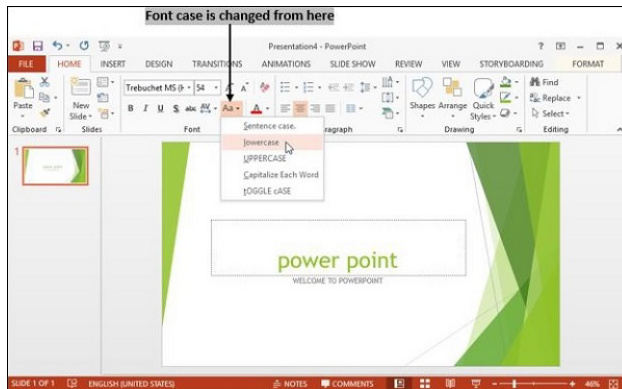
Shortcut key for bold is "Ctrl + B".

Shortcut key for italic is "Ctrl + I".



## Font Case

You can highlight the text by changing it to upper, lower or mixed case.

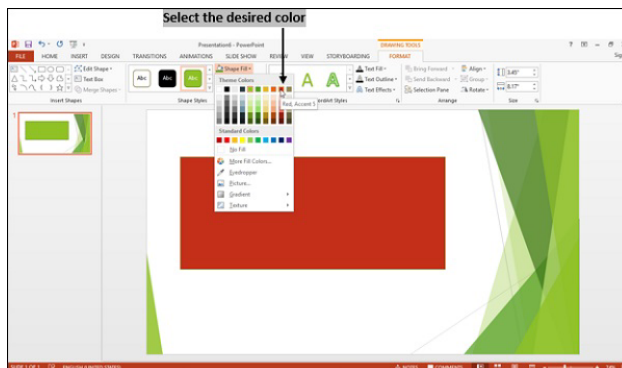


Working with color and line-style

Draw shapes and fill color, follow the below steps –

To draw a shape, right click and select Fill option.

Fill with the desired color.



Background color

Giving background color to PowerPoint image makes the presentation more appealing and beautiful. To apply background, go to Design menu and select Color option.



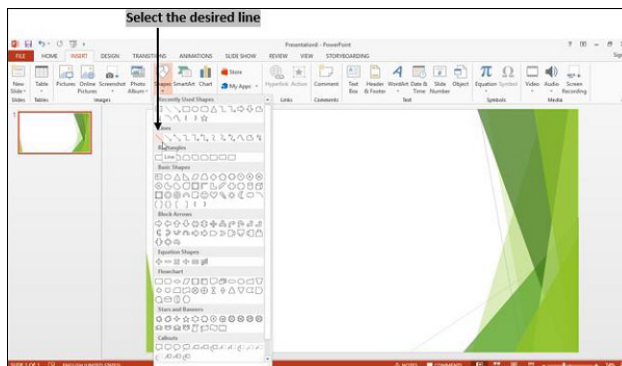


## Line Style

A line is termed as a connector between two points.

In order to insert a line in your presentation, go to Home → Shapes and select the desired line style.

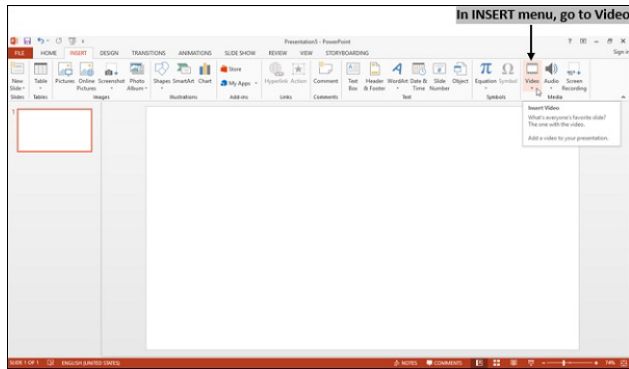
Now you can draw line on the slide pane.



## Adding movie and sound

To insert a movie or audio in a slide, go to Insert video or audio options and select audio or video file you want.

The inserted audio or video file will be displayed in your slide.



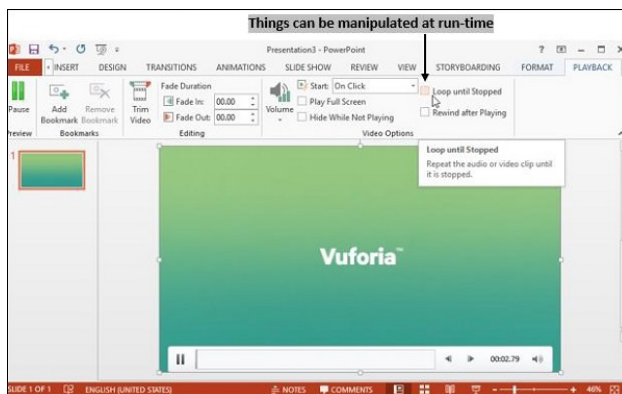
## Slide Manipulation

To play a video or audio file in the presentation, follow the steps below.

Open the slide that contains the video or audio file.

Click play from playback menu.

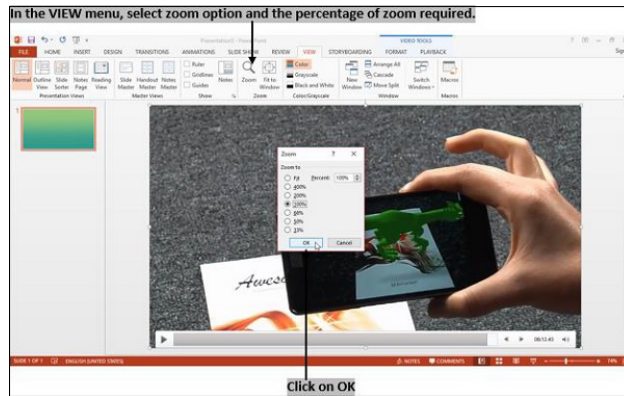
You can also use playback menu to explore options such as: Play Full Screen, Hide While Not Playing, Loop, etc., as well as adjust volume or mute playback of the file.



Current playback position in the file is indicated on horizontal slider.

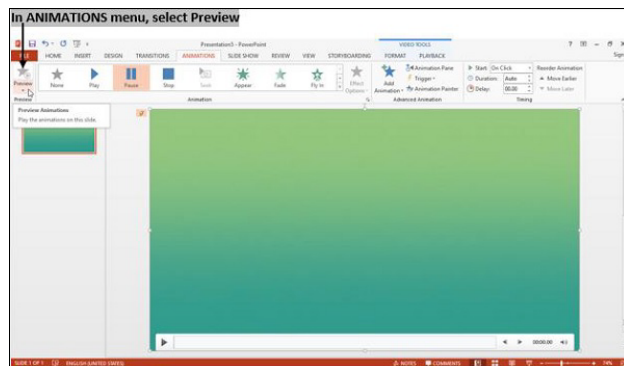
Use the vertical slider to adjust the playback volume.

Video files provide zoom-in feature which can be selected from "View" menu.



PowerPoint enables to see the preview of audio or video files.

To preview the file, go to Animations → Preview.

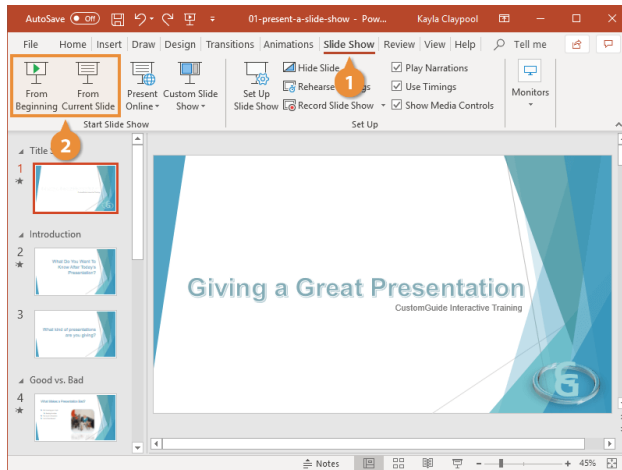


Start and End a Slide Show

Click the Slide Show tab on the ribbon.

Select From Beginning or From Current Slide.

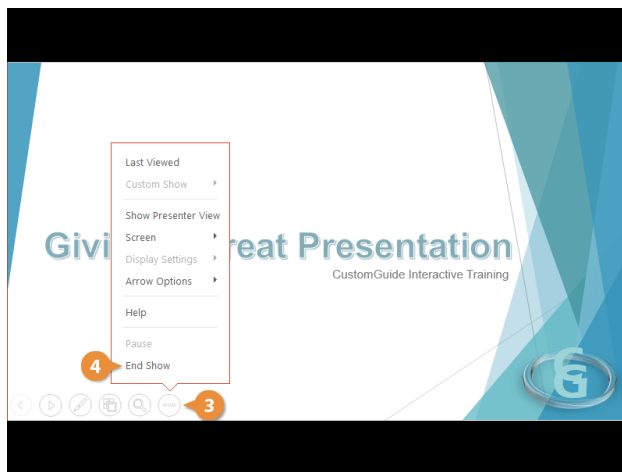
You can also press F5 on your keyboard or click the Slide Show button in the status bar to start the presentation.



To exit the presentation and return to normal view, click the Options button.

Select End Show.

Pressing the Escape key also ends the presentation.



## Move Through Slides

There are navigation buttons located at the bottom-left of a slide when presenting. You can use these to navigate a presentation or use navigation keystroke shortcuts on the keyboard.

Click the arrows to move forward or back in the presentation.



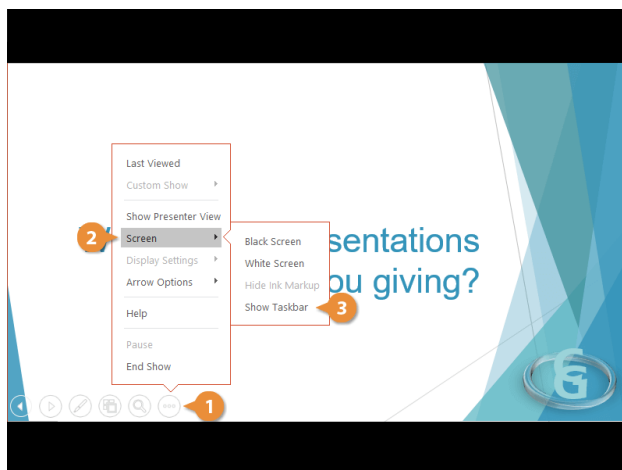
## Switch Programs

Sometimes when you're in a presentation, you'll need to switch to a different program to present information.

While presenting, click the Options button.

Select Screen.

Select Show Taskbar.

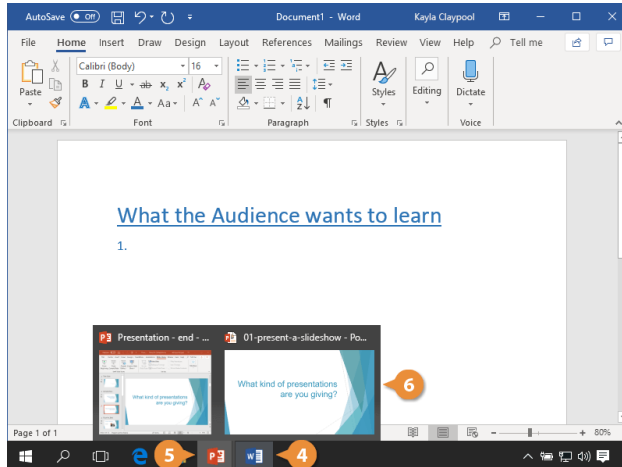


The taskbar pops up at the bottom and now you are free to navigate.

Click the program you need to jump to.

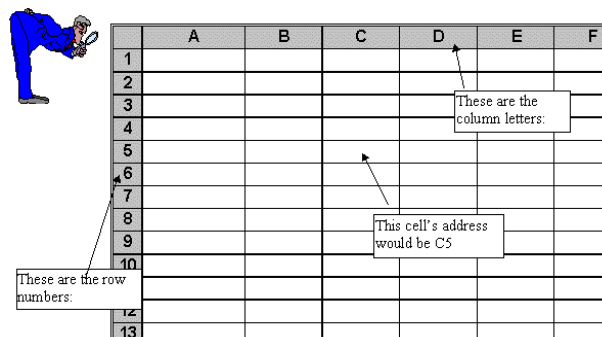
When you're ready to switch back, just click the PowerPoint icon in the taskbar.

Select the presentation.



## Introduction to Excel Spreadsheet

A spreadsheet is a computer application that is designed to add, display, analyze, organize, and manipulate data arranged in rows and columns. It is the most popular application for accounting, analytics, data presentation, etc. Or in other words, spreadsheets are scalable grid-based files that are used to organize data and perform calculations. People all across the world use spreadsheets to create tables for personal and business usage. You can also use the tool's features and formulas to help you make sense of your data. You could, for example, track data in a spreadsheet and see sums, differences, multiplication, division, and fill dates automatically, among other things. Microsoft Excel, Google sheets, Apache open office, LibreOffice, etc are some spreadsheet software. Among all these software, Microsoft Excel is the most commonly used spreadsheet tool and it is available for Windows, macOS, Android, etc.

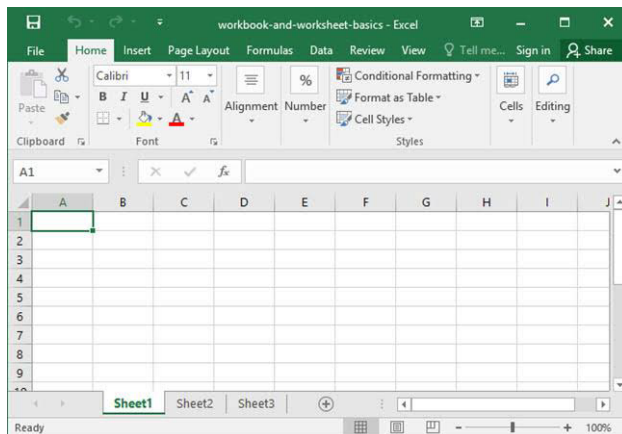


## Excel Worksheet

An Excel worksheet is a single spreadsheet that is a matrix of rectangular cells, organized in a tabular form of rows and columns. In total, it contains 1,048,576 rows and 16,384 columns, which simply means there are 17,179,869,184 cells in a single page of excel's spreadsheet where you can write, edit, and manipulate your data. As per the naming convention followed, rows are referred to as natural numbers starting from 0 and columns are referred by alphabet(s) beginning from A. Practically, there is as such no limit of worksheets which you can keep in a workbook. It simply depends on the memory of the system used.

## Excel Workbook

An Excel workbook is just like a file or a book, which consists of one or more worksheets, having various sort of related information. It also enables you to create and maintain as many worksheets as required with no defined upper cap. The fundamental objective is to organize relevant data in a single place, but in different categories (worksheet). For instance, if a college were to maintain records of students, various worksheets could be one of student personal information record, one for their attendance, one for their fee deposit information, etc.



## Deleting a Column or a Row

Click on the column or row header to highlight the entire column or row to be deleted. Right-click on any cell in the highlighted column or row. Click on Delete from the menu.

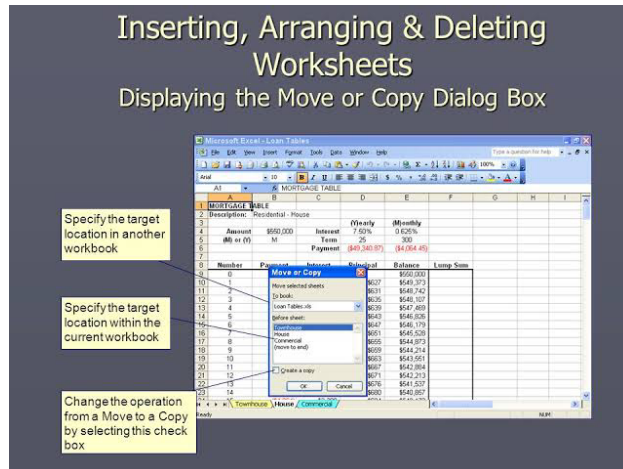
## Inserting a Column

Click on the column header directly to the right of where you want to insert a new column. Right-click on any cell in the highlighted column. Click on Insert from the menu.



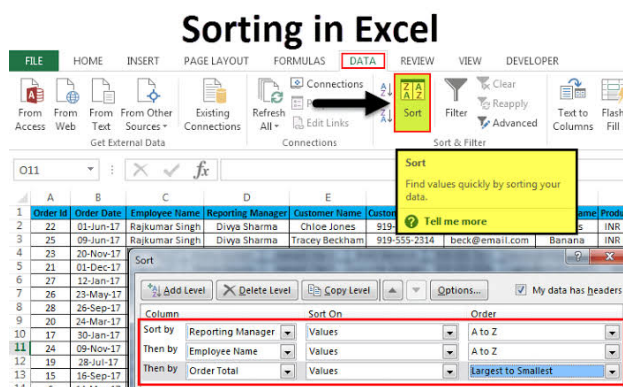
## Inserting a Row

Click on the row header directly below where you want to insert a new row. Right-click on any cell in the highlighted row. Click on Insert from the menu.



## Sorting

Click on the grey rectangle between the "A" column header and the "1" row header in the upper left corner of the worksheet to select the entire worksheet. Click on Data on the menu bar, and then Sort... Under Sort by, select the column to sort by and select either Ascending or Descending order.



## Displaying Formulas in the Worksheet

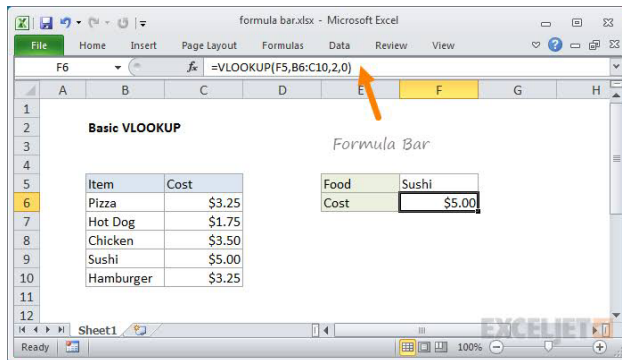
Hold down the CTRL key, and press the left single quote key . Repeat this operation to return to numerical display.

## Entering Formulas





Click on the cell in which you want to enter a formula, and type the formula.

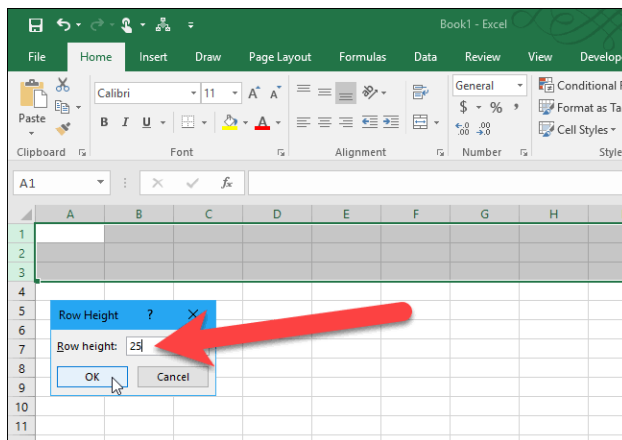


### Adjusting Column Width

Click on the column header to highlight the entire column. Right-click on any cell in the highlighted column. Click on Column Width... from the menu and enter a value for the column width.

### Adjusting Row Height

Click on the row header to highlight the entire row. Right-click on any cell in the highlighted row. Click on Row Height... from the menu and enter a value for the row height.



### Adjusting the Format of Numerical Data

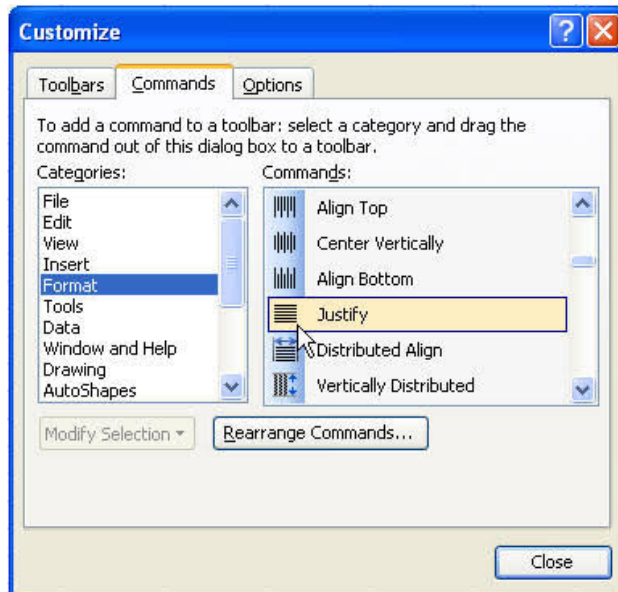
Click and drag over the cells containing the numerical data. Right-click on any cell in the highlighted area. Click on Format Cells... Click on the Number tab, and select the Category: for the type of data in the cells.

### Justification of Cell Contents

Click on the cell. Click on the justification button on the Formatting Toolbar.

#### Justification of an Entire Column or Row

Click on the column or row header to highlight the entire column or row. Click on the justification button on the Formatting Toolbar.

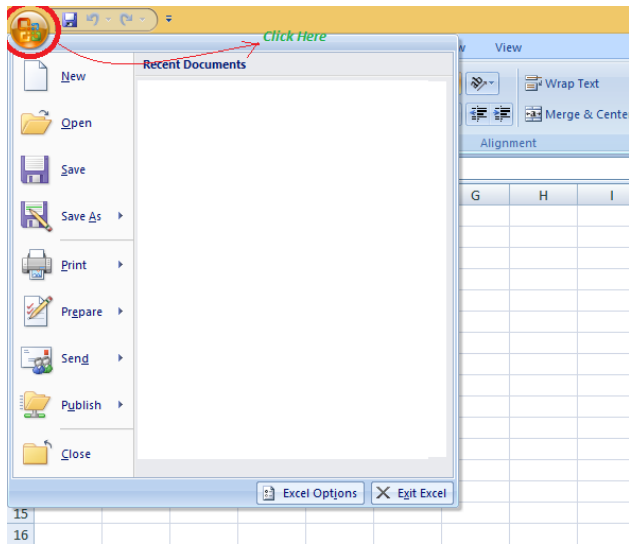


#### Creating a new Workbook

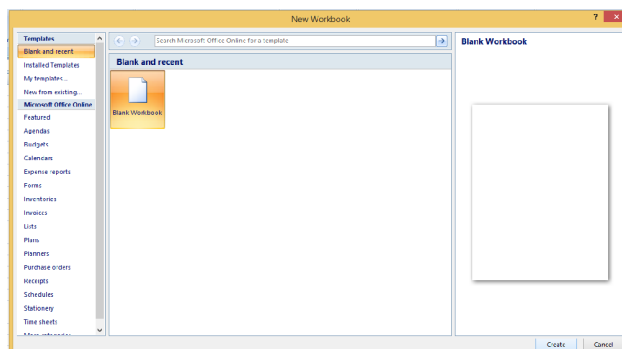
Follow these steps to create a new Blank workbook, giving a name to it & saving it:

Step 1: Click on the Microsoft Office button on the top-left corner.

Step 2: Then click on New.



Step 3: A dialog box for New Workbook will pop up. Click on blank Document & then on Create tab.



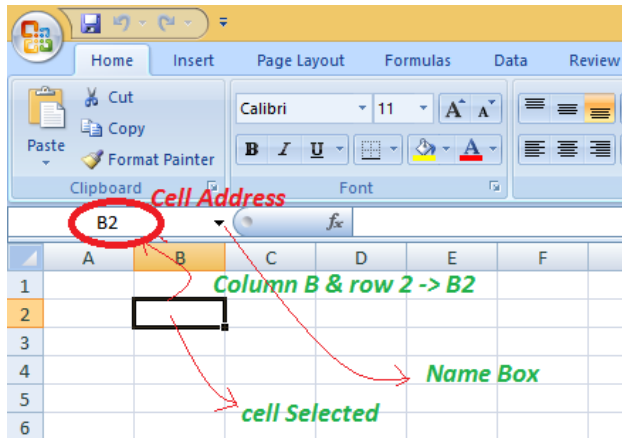
A new blank workbook is created & it appears on your screen.

### Inserting Text in Excel

In Excel, you can see multiple rows & columns, each rectangular box in a row or any column is called a Cell. A cell address on a worksheet can be determined by combining a column letter and a row number. Using these addresses, we can refer to any cell (in Excel formulas) in the worksheet.

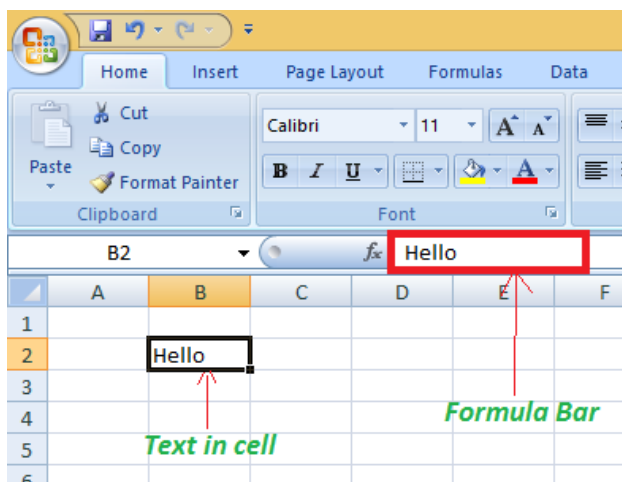
As you click on any of the cells, you can see its address in the name box (Left most side below the home tab).





Step 1: Select a cell in which you want to insert text.

Step 2: Insert your data by typing something from the keyboard (In that selected cell)



Whatever text you enter, the same text appears in the formula bar too (for that cell)

### Edit/Delete Cell Contents

Step 1. Select the cell to change or delete the text.

Step 2. To erase text and make a correction, press the Backspace key on your keyboard.

Or, To erase the whole contents of a cell, press the Delete key.

Or, The formula bar also allows you to alter and erase text. Simply select the cell and then position your cursor in the formula bar.

## Navigation In Excel

Step 1. Go to the right of the selected cell, press the Tab key.

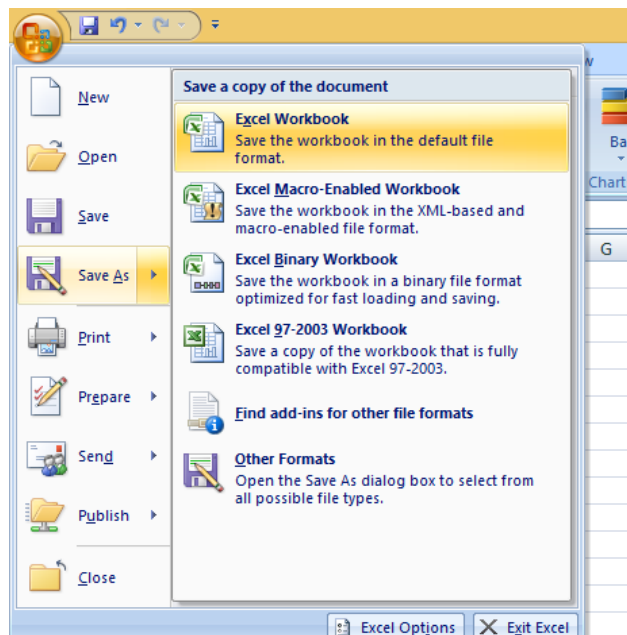
Step 2. To move to the left of the selected cell, hold down Shift and then Tab.

Step 3. To traverse the worksheet, use the Page Up and Page Down keys(with Shift in Laptops).

Step 4. Use the arrow keys to navigate.

## Saving The Workbook

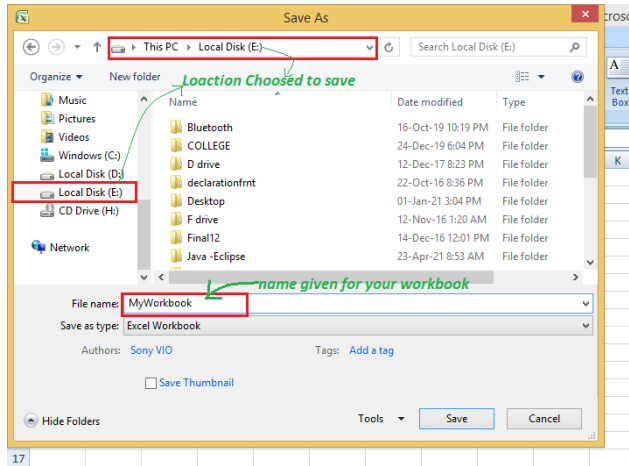
Step 1. Click the Microsoft Office button on the left.



Step 2. Save or Save As are the options, choose one.

**Save As** – lets you give the spreadsheet a name and save it in a specific location. If you want to save the file for the first time, or if you want to save it under a new name, select **Save As**.

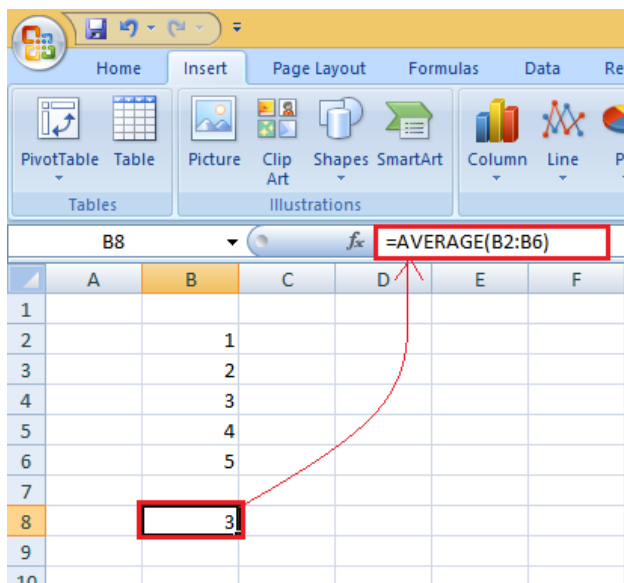
If the file has already been named, just choose **Save**/press **Ctrl + S** to save your work.



## Using Formulas In Excel

You can use predefined Excel formulas by just typing: `"=Formula_Name(Arguments)"`. When you type the first few characters of any formula, excel provides a drop-down list of formulas matching that sequence of characters.

You can see the formula in the formula tab near the name box.



So, in this way you can easily create a workbook, work on it, navigate through it & save it.

## Introduction of internet

The Internet (or internet)[a] is the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to communicate between networks and devices. It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents and applications of the World Wide Web (WWW), electronic mail, telephony, and file sharing.



The Internet has become a very important part of our daily lives and has its applications in wide areas.

Some of the areas in which Internet is used are –

Communications

Education and research

Instant messaging

Online business and shopping

Online financial services

File and data sharing

Developing collaborative software

Design and development of applications and computing environments

Content management

Entertainment

Social networking

Storage of data

Online publishing and digital newspapers

Governance and politics

Discussion forums

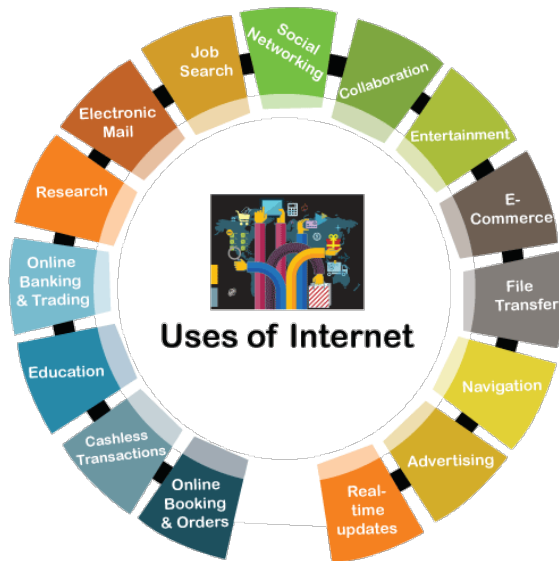
Charity

Audio and video conferencing

Telephony (VoIP)







### Electronic Mail (email)

The first major use of the internet is Email. People thronged to Email for sharing information, data files, Photos, Videos, Business communications, and any other files instantaneously with others. This had enabled faster communication between people and improve business efficiency. An email has reduced the usage of paper considerably and reduced the load on physical mail systems.



### FTP File Transfer

This is the second major use case for the internet in the early days. FTP is the file transfer protocol that enables data exchange between two stakeholders over internet media in a secure way. The data exchange may occur between two business entities or customers with business and vice versa. Normally E-mail restricts the size of a file that can be shared, and also, it is not secured to share sensitive and confidential data across public networks. FTP concept is still in use even today in mobile apps for files downloading.





### Live conferencing

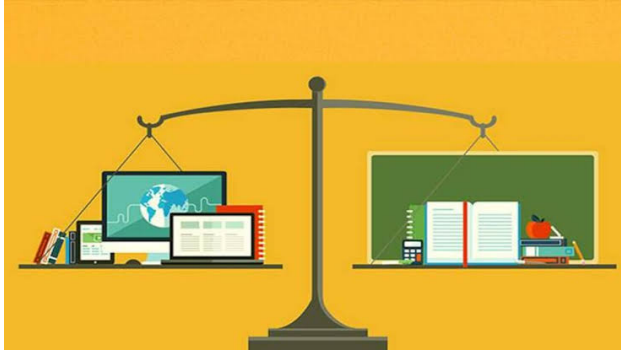
Online chat tools like messenger, Skype, and other video conferencing tools help people to get connected 24 x7 and have a hassle-free business and personal discussion. This avoids unwanted travel by people and saves their time for productive use. The Internet has also facilitated work from home with seamless connectivity to the office and avoid daily commuting.



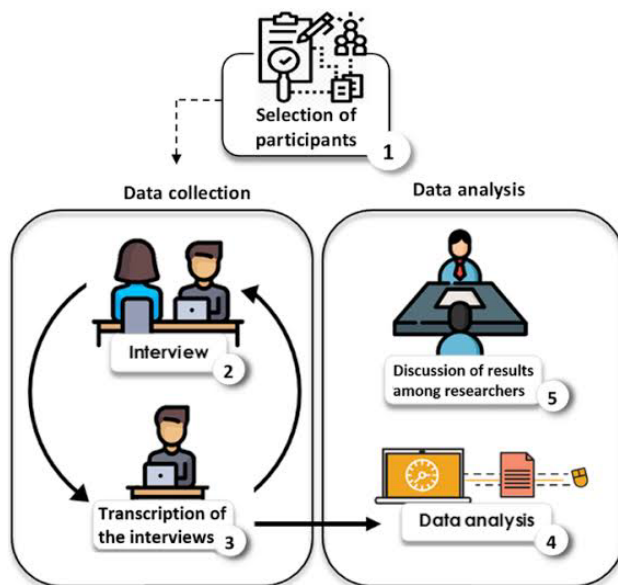
### Education Navigation

The Internet offers a wealth of educational material on any subject with structured navigation and search facilities. One can seek any reading material, and the internet will get it for them from any server in any part of the world, and people need not have to go to libraries to go through books. Those who cannot attend physical (face to face) class can take an online course where they get connected to the teacher, in the other part of the world, in video mode and get taught on the subject backed up other audiovisual tools.





A discussion group is a group of individuals, typically who share a similar interest, who gather either formally or informally to discuss ideas, solve problems, or make comments. Common methods of conversing including meeting in person, conducting conference calls, using text messaging, or using a website such as an Internet forum.[1] People respond, add comments, and make posts on such forums, as well as on established mailing lists, in news groups, or in IRC channels.[2] Other group members could choose to respond by posting text or image.

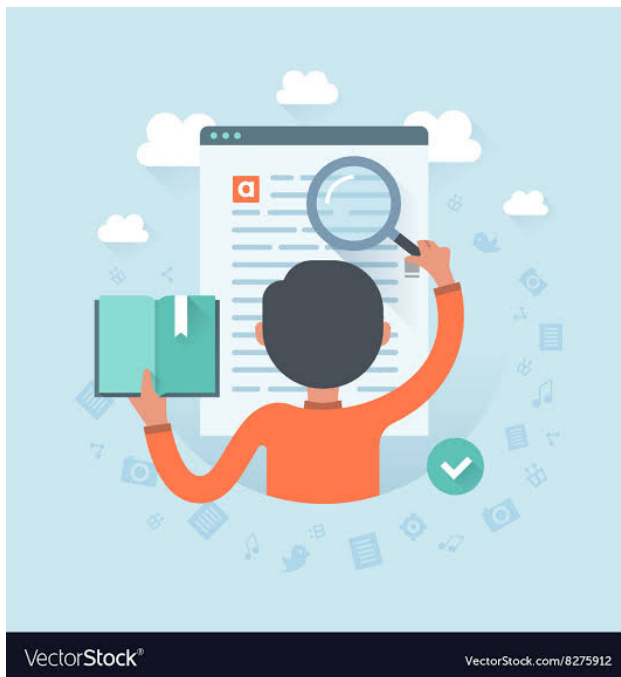


Information exchange or information sharing means that people or other entities pass information from one to another. This could be done electronically or through certain systems.[1] These are terms that can either refer to bidirectional information transfer in telecommunications and computer science or communication seen from a system-theoretic or information-theoretic point of view. As, "information," in this context invariably refers to (electronic) data that encodes and represents[2] the information at hand, a broader treatment can be found under data exchange.



## What is Information Searching

1. A process, which people undertake to locate or retrieve specific information to meet an information need, typically, but not always with the aid of a search engine or other information retrieval system. Learn more in: The Changing Nature of Information Behaviour



## What is SMART Classroom

1. Smart classroom is technology-enhanced classrooms that foster opportunities for teaching and learning by integrating learning technology, such as computers, specialized software, audience response technology, assistive listening devices, networking, and audio/visual capabilities.

Designed for computer-enabled classrooms. SMART Classroom™ Suite interactive learning



software provides teachers with the essential tools to manage classrooms, assess students, and encourage collaboration.



## Smart Classroom Equipment

### Interactive Whiteboards

The transformation of traditional blackboards from digital classrooms without interactive whiteboards is incomplete. A teacher can teach any subject with touch-sensitive multimedia surface by using their finger, pen or stylus. Interactive boards help teachers in engaging students with visual media and modern lessons.



## Projectors

Projector is a portable solution that helps convert any surface (whiteboards, existing projector screens, or wall surface) into an interactive surface. Smart projectors help teachers in assisting sessions with presentations, videos, and other visual elements by connecting them with their laptop or computer.



## Interactive LED/LCD Panels

Kids love learning from interactive screens, whether it is a television, computer screen or a video console. Digital learning becomes fun with 2D and 3D animations, audio and video presentations, and graphics. A smart classroom equipped with interactive LED or LCD panels help teachers in planning their lessons around visual media. Interactive LED panel is popular smart class equipment in college.



## Digital Podium

A digital podium is an advanced lecture stand that is well-equipped with various media components which enables an uninterrupted learning session. Some of the devices attached with it are for public addressing including speaker, amplifier, and mic. These podiums also come with integrated UPS for a lecture recording, keyboard drawer and continuous power supply. In short, a must-have for lecture halls and auditoriums.



## Speakers & Wireless Microphones

With speakers in the smart classrooms, there is no room left for questions like 'can you hear me back there?' Modern speakers ensure that teacher's voice is audible to the last row and no one misses out on important points. A wireless microphone eliminates dealing with long coils of wires. They also let you be more mobile and allow you to be hands-free.







technology:

Operation and Importance of smart classroom in teaching

Enhanced Learning Experience

By using smart classroom technology and interactive whiteboards, information can be illustrated with the help of photos, maps, graphs, flowcharts and animated videos. This makes learning more attractive, interesting and easy to understand. It encourages the ability of students to learn and memorize the topic for a prolonged period of time.

Interactive Learning Experience

According to a Gallup survey, after introducing smart technology in schools & colleges, students' engagement rate has improved by 55%.

The presence of smart boards helps teachers to deliver lectures more effectively by using the different projections in their presentation to explain the topic. Teachers can easily explain each and every part of the lesson with some special effects and graphic presentations. It helps to create a quick FAQ session between teachers and students that actually makes a wonderful learning environment in the classroom.

Easy Access to Online Resources

A smart class has digital display boards and projectors that are synchronized. A teacher can



easily show some practical solutions from the web. While students can see various online resources on the internet.

There is an adoption rate of 70 per cent of smartboards and interactive whiteboards in the education sector including Govt and private sectors for the past 4, 5 years. This is an obvious indication that educational institutes are embracing this advanced technology.

Follows Go Green Concept

Smart classroom technology follows a dynamic information sharing approach and there is no need of paper, pen, pencil & printouts, thus stepping into 'Go Green Concept'. We can say, this is one of the major benefits of smart classroom technology to keep nature clean and green.

Time Saving Technology

In contrast to the traditional learning method, where students had to make long written notes. Smart class technology allows students to make presentations online and get feedback from their teachers in less time. Same for teachers who do not need to tell students to make rough notes, as presentation can be shared directly with everyone. This saves a lot of time of teachers and students that can be used for another interactive activity.

Increased Productivity

Data shared with the help of intelligent class technology is presented in a visual format that is more likely to engage the students. Not only students' involvement but, they understand things more easily in minimal time. This motivates students and teachers accomplish pretty good results leading to improved productivity.

Smart Boards are Fun!

Smartboard technology makes learning experience more fun among the students. It can turn a boring lecture into an amazing and interactive session. Instead of just talking about the topic, digital boards engage it by displaying content in the form of animations, visuals and previews.

At the same time, students are likely to engage more that makes the session successful.

